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ABSTRACT

Assessing readiness among young children today implies undertaking a broad range of observations and activities in an atmosphere where children can feel comfortable and interested. Until recently, readiness meant readiness for reading. A mental age of six and a half was accepted as the prerequisite for beginning reading instruction. There has been, of late, considerable criticism of the notion of a single, global, group administered instrument to classify children as "ready" or "not ready." Such premature labeling may result in exclusion from opportunities essential for a child's full development. Assessment in an educational setting may serve three functions: for selection, for pupil guidance, and for planning and evaluating instruction. Some systems of assessment are based on a medical model of educational planning by using diagnostic measures and prescribing instructional treatments for individual needs. Two such systems have been developed by Educational Testing Service for assessing young children: Let's Look at Children and CIRCUS. Let's Look at Children describes a series of techniques based on a Piagetian theory of cognitive development. CIRCUS is a comprehensive array of 17 measures for assessing social competency in young children. Both systems stress a sequence relevant rather than a chronological age or normative approach to child development. (Author/BJG)

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SUMMARY

Assessing readiness among young children today implies undertaking a broad range of observations and activities in an atmosphere where children can feel comfortable and interested. Until recently, readiness meant readiness for reading. A mental age of six and a half was accepted as the prerequisite for beginning reading instruction. There has been, of late, considerable criticism of the notion of a single, global, group administered instrument to classify children as "ready" or "not ready." Such premature labeling may result in exclusion from opportunities essential for a child's full development.

Assessment in an educational setting may serve three functions: for selection, for pupil guidance, and for planning and evaluating instruction. Some systems of assessment are based on a medical model of educational planning by using diagnostic measures and prescribing instructional treatments for individual needs.

Two such systems have been developed by ETS for assessing young children: Let's Look at Children and CIRCUS. Let's Look at Children describes a series of techniques based on a Piagetian theory of cognitive development. CIRCUS is a comprehensive array of 17 measures for assessing social competency in young children. Both systems stress a sequence relevant rather than a chronological age or normative approach to child development. They were developed to help teachers guide children toward a broad gauged mastery of their learning environments.

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ASSESSING YOUNG CHILDREN*

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The notion of assessing young children, on entry to nursery school or kindergarten, or for readiness for primary school, is gaining in popularity, but it is also causing some confusion. Our understanding of "assessment," of "readiness," of "school," or even "children," has been undergoing accelerating transformation. Of course, these innocent words were never absolute and unchanging in their meaning, but the rate of change of ideas seems to have accelerated in recent years. Indeed, the evolution of commonly accepted definitions of "school readiness" has merely been reflecting the changing models of human development and the changing policies of the educational and political institutions within our society.

Take the word "school." School used to begin in first grade, where one learned to read. But with the ubiquitous public supported kindergartens, the proliferation of nursery schools for middle-class children, and massive federal support of preschool for the educationally disadvantaged, school might now also be a place where three year olds learn skills, behaviors and attitudes acquired by more advantaged peers at home, or where middle-class children can develop psychosocial maturity.

Things were a lot easier in the days when this country was young. In 1647, when the first compulsory education laws were passed in Massachusetts, the model

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* Talk for the State-wide In-service Meeting in Early Childhood Education, sponsored by Department of Education, State of Minnesota, May 3, 1975.

of a child was that of the bearer of original sin; and the primary function of school was to teach the young sinners to read so that they could be protected by a knowledge of the scriptures to arm them from the blandishments of "that old deluder, Satan."

Until recently, readiness for school was understood to mean readiness for reading. Since the '30s, research by Morphett and Washburne was influential in widespread adoption of the model of a "ready to read" child as having a mental age of 6 1/2 years. Since reading generally began in the first grade, the kind of assessment needed for this model of readiness meant a relatively clearcut determination of mental age based on the empirical work of Binet and his followers. This dichotomized model of a pupil as being "ready" or "not ready" led to the development of orally administered group measures under the rubric of "reading readiness tests," which yielded a single score with a specified cut-off point. Children labelled "ready" were started on reading, while those labelled "not ready" did prereading activities. This dichotomous model of a beginning pupil, and the use of "readiness" tests for selection, is compatible with a model of society which is based on competition at every turn, the "survival of the fittest" principle of social Darwinism.

Within the past decade, this comfortable idea of a single global measurement of readiness has fallen away from general acceptance. While the yes-no model for assessment did have the advantage of simplicity, there were a number of drawbacks associated with this model as well. First, a single dichotomous readiness measure came increasingly under attack as being "culturally biased," since scores

favor children from educated families. Then, too, while it is probably true that most children labelled "ready" would be likely to benefit from reading instruction, withholding reading instruction from those designated "not ready" would only serve to widen the gap between groups. Research studies have shown that a teacher's expectancies do affect the way a teacher treats a child. Willis, and Long and Henderson, for example, have shown that knowledge of readiness test results were related to a teacher's expectancies of pupils. Hobbs's "The Futures of Children" has seriously questioned the need for such labelling of individual children, and discusses the social, legal and ethical implications of classifying and labelling children which may result in exclusion from opportunities essential for their full development.

Furthermore, the custom of beginning reading at the mental age of 6 1/2 is no longer so rigidly adhered to. Reading activities can begin at any time. Popular media programs such as Sesame Street introduce reading to preschool children at home. And compensatory programs such as Head Start have been implemented with the avowed goal of early introduction of formal instruction to disadvantaged children to narrow the educational gap.

In general, assessment in education serves three functions: for selection, for pupil guidance, and for planning and evaluating instruction. A cursory study of the quantity of instruments currently available for assessing young children shows an embarrassment of riches. The Head Start test collection at ETS in Princeton contains about 1000 tests, and has, in addition, over 2000 research instruments from "ABC Inventory" to "ZIP Test." Most "readiness tests" have been used for pupil selection purposes.

Faced with such an array of instruments for young children, I am going to confine my remarks today to two systems of assessment which my ETS colleagues have recently developed, and continue to tinker with through an iterative process of instrument and materials development, revision, initial tryout, revisions, national administrations, data analyses, revisions, validation studies and revisions. Neither of these two systems is based on the model that a child can be classified simply as "ready" or "not ready," but on broad, theoretically based and developmentally oriented concepts of children. The "Let's Look at Children" system, developed by Edward Chittenden and associates, is based primarily on Piagetian theory, while CIRCUS, developed by Scarvia Anderson and associates, is an eclectically derived battery for assessing "social competency" in young children. ETS specialists in early childhood assessment have developed these two diagnostic and prescriptive systems in response to specific needs expressed by the educational community. The systems continue to evolve in accordance with developing theories of how children grow and learn in order to become participating members of our multicultural, pluralistic, democratic society. These two assessment systems are called Let's Look at Children and CIRCUS. The first is primarily meant for assessing the intellectual growth of individual pupils; CIRCUS is administered in small groups to assess individual progress, and is suited for program evaluation as well.

Slide 1

Let's Look at Children began as a major project undertaken cooperatively by ETS and the New York City Schools. It started out in the mid-'60s as Let's Look at First Graders, and was developed as an array of instructional and assessment materials and techniques in response to the question:

> How can New York City help its teachers to better understand and assess the intellectual development of every entering school child, so that they may teach every child more effectively?

The use of standardized tests was considered and rejected because children at that age have not had a common base of a number of years of exposure to school

type learning, so that comparison of a child to other children through empirical means cannot be very meaningful to educators. Reliance on a theoretical understanding of child development seemed a more reasonable way to assess the intellectual development of young children. The instructional and assessment materials 2
were developed in accordance with some basic assumptions. These were:

1. Intelligence is essentially a set of developed skills rather than inherited characteristics.
2. Intellectual skills develop as a result of the child's continuous interaction with his environment.
3. Children are inherently motivated to explore and master their environment.
4. Intellect develops through a sequence of related stages that produce qualitative change in the way children think and are able to deal with the world.

These ideas about intellectual development were stated in nontechnical, common sense English, and illustrated with concrete examples of behavior that teachers can observe for themselves. The examples of behavior were based on interviews with over a hundred primary teachers in New York City, and later expanded to a study of a national sample of over 250 first grade teachers, on their idea of the meaning of the word "readiness." In the course of developing the materials, the name was changed from the narrower Let's Look at First Graders to Let's Look at Children. 3
This change was in recognition of the wide range of age groups and developmental levels of children entering school.

All of the materials in Let's Look at First Graders involve tasks which were designed to give children an opportunity to demonstrate some kind of logical, concrete, intellectual behavior, and to provide teachers with a relatively standard

opportunity to observe this behavior. Here are some examples of the kinds of materials in the kits developed for New York City:

Sequence cards provide an activity which helps children to think logically about various sequences of events. By observing children's performance, teachers can assess the pupil's concepts of space and time and follow individual development. The first set of cards represents short-term sequencing. The apple set 4
helps children observe detail and gain understanding of the logical, irreversible order of certain kinds of events. The changes in the transportation vehicles set of cards depict a long-term sequence, and help a child comprehend the nature of 5
long intervals. A reversible sequence, one that can be interpreted in either direction, is more ambiguous. The pigeon set can help a child to learn to label 6
the action or change that is taking place, since the pigeons to the left of the trash basket can be seen as getting progressively larger or smaller.

The New York City schools tried out the materials in 25 schools the first year, and went citywide in following years. Feedback from the New York City Project and from other national studies involving young children have led to a decision to broaden the range of age groups and developmental levels covered by the materials to ages from 4 to 8 or 9, and to expand substantially the section on assessment procedures. Later this year, Let's Look at Children will be published in two volumes with completely revised format and content. Volume One will be an expanded and updated Theory to Classroom guide for teachers, incorporating the most recent research findings. Volume Two will include a set of selected assessment procedures designed to highlight aspects of the development

of thought and language in children. Let's Look at Children has been constructed on the premise that assessment procedures used in research to study children's intellectual and linguistic development should be adapted for the classroom, as a means of bridging theory and practical observation. Its central purpose is to help teachers gain a sharper insight and broader perspective of child development.

The assessment procedures provide different ways of obtaining information about the understandings of children in the following areas:

The Development of Concepts

- Quantity and Number
- Space
- Time
- Natural Events

The Development of Language

- Grammatical Structures
- Functional Words
- Communication
- Reading
- Writing

These assessment procedures should be considered a supplement to the existing curriculum, and their success will be dependent upon the individual teacher's interest, flexibility and judgment.

Here are some examples of the assessment procedures detailed in the forthcoming Let's Look at Children. They are designed to make use of a variety of simple materials available in preprimary and primary classrooms. First, we'll look at examples of assessing the development of concepts, then we'll look at assessment of language development.

A wide variety of concepts formulated by children involve some kind of measuring and counting activity. The development of ideas about space, time, motion and numbers all require quantification at some level. Gradually, global notions of "before" and "after," "near" and "far," or "more" and "less" become replaced by numerical comparisons.

An eight year old can count a group of blocks or cookies and conclude that there are "ten altogether." But a younger child who can recite the numbers from 1 to 10 might not be able to match each name in a one-to-one correspondence to each block or cookie. Similarly, children who have acquired an understanding of conservation of number and amount are manifesting broader, more comprehensive changes to intellectual structure, and indicate the presence of a network of cognitive abilities known in Piagetian terms as logical operations. That is why concepts of conservation develop in rough conjunction with the related logical abilities of classifying and ordering.

The next few slides illustrate assessment procedures for the development of concepts. Blocks, chips, checkers or other discrete objects can be used in the assessment of one-to-one correspondence, which develops preliminary to conservation of numbers. The teacher sets out various arrangements of blocks and says to the child: 7

I WANT YOU TO PUT OUT JUST AS MANY BLOCKS AS I DID.

PUT OUT THE SAME NUMBER OF BLOCKS THERE AS I HAVE HERE.

Children with preoperational approaches to number cannot establish numerical 8-11 equivalence. Some children show an increasing articulation of a perceptual

preoperational approach by matching blocks in configuration but not in number. Children with operational use of numbers can make arrangements which match in number, but not necessarily match in configuration.

Once a child has acquired one-to-one correspondence, it is possible to assess the child's capability to conserve numerical equivalence of two sets of objects through various transformations. This procedure begins with establishing the equivalence of two sets of blocks, and then transforming one set into clearly different configurations and asking: 12

DOES THIS SIDE HAVE THE SAME NUMBER OF BLOCKS AS THAT?

DOES ONE SIDE HAVE MORE BLOCKS?

WHY DO YOU THINK SO? 13

Young children of four and five have little understanding of conservation of equality through physical transformations. They may show complete incomprehension by answering at random, or show perceptually consistent understanding by responding that the collapsed side now has fewer blocks. Beginning about age six, children manifest their ability to conserve over various transformations, with variations in their levels of explanations. Some children will seem to be transitional in their thinking by demonstrating conservation for some transformations, but not for more complicated ones.

Procedures to assess the child's understanding that a constant volume of 14
liquid, or mass of solid material, is conserved throughout various transformations involve the use of simple materials and relatively standard ways of questioning the child:

DO THEY HAVE THE SAME AMOUNT? 15-17

DOES ONE HAVE MORE GRAPE JUICE?

WHY DO YOU THINK SO?

and

TELL ME ABOUT THE PIECES NOW... 18

DO THEY HAVE THE SAME AMOUNT OF CLAY?

DOES ONE HAVE MORE?

WHICH ONE? WHY DO YOU THINK SO?

Many younger children of four, five and six base their judgments about quantity on the changes in the shapes of the containers or the clay. Older children begin to recognize that the quantities have remained equivalent, and view quantity as constant, and offer explicit explanations for their assertions. Some children are transitional, change their minds in the course of the assessment interview or offer conserving responses on some transformations, but not those with more distinct perceptual differences.

Another aspect of acquiring quantitative concepts is assessed in the seriation procedure. Ten writing implements of various kinds ranging in length from about 3-8 inches are presented to a child and he or she is asked to put them in order. By observing the strategies in ordering a series, it 19
is possible to assess their development in seriation. There are three general ways in which children construct the series: they may form several groups of implements or show little understanding of ordering; they may seem to have a clear idea of the desired order, but the methods tend to have a

trial-and-error quality; or the child can handle the problem by systematically considering the entire set of objects, which would indicate logical operations on his part.

A child's conception of the space in which he moves and his ways of representing such space are more complex than the abilities involved in perceiving differences in the shapes and sizes of objects. Topological relationships can be observed in children's drawings. Four and five year olds reflect the 19A
sense of topological properties, but tend not to show much concern with geometrical properties such as perspective, proportion or distance. 19B

A simple procedure with a piece of string can assess a child's understanding of the topological properties of enclosure and continuity, and his ability to move from a one-dimensional to a three-dimensional space. By showing a child a simple overhand knot, and asking him to: 20

MAKE A KNOT LIKE THIS ONE.

and

CAN YOU TELL ME HOW YOU DID THAT?

In order to tie a knot, the child must be able to move from one dimension to another with the same material, and must have some mental imagery of the process.

Assessment of spatial perspectives involves providing a framework for observing the development of projective space in young children's thinking, demonstrated by the ability to coordinate different points of view. Materials consist of a snack consisting of a paper cup and an apple; a doll or animal 21

which will move around the snack, a paper tablecloth which indicates the placement of each object and the doll's position (numbered 1 through 4), and cards with pictures of the snack from various points of view.

The snack is placed on the table with the picture cards in front of the child. The doll is to be placed in each numbered position in turn. Warm up by asking:

FIND THE PICTURE THAT SHOWS WHAT YOU SEE.

If the child is unable to choose the correct picture, discontinue the task. If he understands the first request, continue by asking: 22

WHEN THE BEAR SITS HERE, WHAT DOES IT SEE?

FIND THE PICTURE THAT SHOWS HOW THE SNACK LOOKS TO THE BEAR.

WHY DO YOU THINK THIS PICTURE SHOWS WHAT THE BEAR SEES?

The young child of four or five years can identify the objects in a picture and understand that the picture represents the objects, but treats more than one object as a collection rather than a spatial arrangement. As the child becomes aware of spatial arrangements, he can select the picture that represents the objects from his own point of view, but has trouble when he has to select the arrangement that shows the doll's point of view. This persistence in viewing from a single perspective is termed an "egocentric" response. When the child becomes aware that there are different points of view, he may still have difficulty in coordinating the relationships among the objects, resulting in some confusion with left/right or in front of/behind elements of the task. Eventually, a child becomes aware of and can coordinate different points of view by consistently selecting the right picture from the doll's point of view.

The assessment of language development is described in a series of procedures related to grammatical structures, linguistic rules, recognition of ambiguous sentences, sentence repetition, use of "functors," and communication games. One procedure to assess the child's understanding of certain language structures that are exceptions to linguistic rules that have already been learned is called "Who Does What?"

The child is given two animal puppets and the teacher says: 23

NOW I'M GOING TO SAY SOME THINGS FOR THE ANIMALS TO DO. PICK UP THE ANIMAL AND MAKE HIM DO IT.

THE MONKEY WANTS THE ROOSTER TO CROW -- MAKE HIM DO IT.

THE ROOSTER TELLS THE MONKEY TO STAND ON HIS HEAD -- MAKE HIM DO IT.

THE ROOSTER ASKS THE MONKEY WHAT BOOK TO LOOK AT -- MAKE HIM DO IT.

THE ROOSTER PROMISES THE MONKEY TO MEOW -- MAKE HIM DO IT.

The beginning sentences conform to the Minimum Distance Principle, that is, the noun nearest to the infinitive verb phrase does what is asked, and are relatively easy for younger children. But the verbs promise and ask violate it. Research has indicated that promise construction tends to be an earlier developmental acquisition than the more difficult ask construction. Most kindergarten children will demonstrate understanding of sentences that conform to the minimal distance principle, but will have some problems with the exceptions. The results of the assessment procedure should be increased awareness on the part of the teacher of a child's linguistic development.

As you can see, these procedures for assessment leave a great deal of freedom to the teachers in the choice of specific learning materials and activities

which would match the child's developmental stage. Piaget has postulated that the sensory motor activities in the preprimary classes would lead not only to the acquisition of numerical and spatial concepts, but also prepare a child for the logical operations which are associated with formal schooling later on.

A second ETS developed system for assessing preprimary children is called CIRCUS. The background for CIRCUS was the extensive experiences ETS had accumulated at the early childhood level. Some major studies were the Longitudinal Study of Disadvantaged Young Children and Their First School Experiences, the Evaluation of Sesame Street, and The School Readiness Study. This study asked a national sample of first grade teachers what should be the characteristics of a comprehensive set of instruments designed to assess children's readiness to enter usual school programs, and what are the objectives of preschool education. Final impetus came from a conference sponsored by the Office of Child Development on Social Competency in Young Children held in 1973. A group of child development scholars defined "social competency" in young children by listing 29 characteristics in the child's development that contribute to his effectiveness in dealing with his environment.

Not all the domains covered by these research studies proved suitable for inclusion in the CIRCUS array of measurement devices. Some were eliminated because a domain was not measurable in a straightforward way, or did not have direct implications for education in school, or on the basis of time, costs, psychometric confidence, or tryout and subsequent rejection of prototype items and measures. The present CIRCUS array includes 14 measures given directly to

children, two inventories describing children's behavior and a questionnaire for teachers about the educational environment.

The 17 instruments in the CIRCUS battery can be grouped into six general areas on measurement:

Language competency
Perception
Information and experience 27
Divergent production 27A
Individual interests and styles
The educational environment

Which instruments a teacher decides to use would depend on the goals and objectives of the program. There are five language measures in CIRCUS, providing a 28
thorough look at the developing language competencies.

Listen to the Story is a measure of the child's comprehension, interpreta- 29
tion and recall of sentences spoken by the teacher.

> CLARENCE CLOWN WASN'T ALWAYS POLITE. THE CHILDREN HEARD HIM TELL ONE OF THE ANIMALS TO GO TAKE OFF HIS SILLY STRIPED PAJAMAS. WHICH ONE DID HE SAY THIS TO?

What Words Mean measures the receptive vocabulary by associating nouns, 30
verbs and modifiers with the appropriate pictures.

How Words Sound measures auditory discrimination among phonemes, includ- 31
ing initial and final consonants and medial vowels.

> HERE IS A PICTURE OF MAN-CAN-PAN. MARK THE PICTURE OF PAN.

How Words Work measures aspects of functional language, discriminating 32
among verb forms, prepositions, negatives and positives, and sentence orders.

> HERE ARE TWO WAGONS. MARK THE WAGON THAT IS NOT EMPTY.

Say and Tell measures productive language by description of common objects using functional language and telling a story based on a picture. Here is a tape of two children, aged 3 1/2 and 6, responding to Say and Tell. Deborah is younger and less mature in linguistic development. You can hear the difference in their responses. 33 34 35

The four perception measures assess the child's ability to perceive the sights and sounds around him. 36

36A

Noises measures discrimination of real world sounds by associating taped sounds with pictures. Here is a tape sample. 37 38

Look Alikes assesses visual discrimination by asking children to match letters, numbers or drawings. 39

Finding Letters and Numbers measures recognition and discrimination of letters and numbers. 40

Copy What You See measures perceptual-motor coordination. 41

Four CIRCUS measures describe the child's competencies in areas of information and experiences. 42

How Much and How Many assesses quantitative concepts including enumeration, counting, one-to-one correspondence, ordination, comparison, and quantitative language by identification of appropriate pictures. 43

Do You Know measures general information. 44

WHO SURPRISED GOLDILOCKS?

See and Remember measures visual and associative memory. 45

THIS IS ANNA (GIRAFFE). THIS IS BETTY (DOG).
TURN PAGE. MARK THE PICTURE OF BETTY.

Think It Through assesses problem solving competencies. 46

THE JUGGLER DROPPED HIS BALL AND IT ROLLED INTO THE CAGE OF A FEROCIOUS LION. MARK THE PICTURE THAT SHOWS THE BEST WAY FOR THE JUGGLER TO GET THE BALL BACK.

46A

Unlike the other 13 tests, Make a Tree is a measure of divergent pro- 47
duction or a child's ability to perform a task in different ways. 48

There are two measures to be completed by the teacher about the child- 48A
ren which describe the child's interests and styles. Activities Inventory 49
records the child's choices of and usual modes of engaging in typical pre-
primary activities. CIRCUS Behavior Inventory records the child's reaction 50
to the CIRCUS measures.

The 17th measure is the Educational Environment Questionnaire. Because 51
learning doesn't occur in a vacuum, interpretations of the children's learn-
ing should be made in the context of their educational environment. This
instrument is primarily for use across several classrooms for summarizing
data in program evaluation. Scores for pupils will be in the form of descrip- 52
tive statements.

CIRCUS is published, but work on CIRCUS is not done. Work will soon start on CIRCO, the Spanish language version of CIRCUS. CIRCUS II is being developed based on the national administration data base of CIRCUS I of

about 3000 kindergarten and nursery school children; data from the CIRCUS validation study which follows 2000 kindergarten children over two years, and ETS data from recent large-scale administrations of grade one Cooperative Primary Tests. Factor analyses of these large pools of data have yielded common traits which will guide the choice of measures to be included in CIRCUS II, which will consist of construct-referenced instruments for children in kindergarten and first grade. One experimental instrument for CIRCUS II may well be some kind of attitude and interest inventory. Right now, trial tests of paired comparison formats such as these are being run. The results will determine whether they will be included in the final version. 53

LOOK AT THESE TWO PICTURES AT THE TOP OF THE PAGE. THIS ONE SHOWS CHILDREN LOOKING AT BOOKS AND THIS ONE SHOWS CHILDREN LEARNING HOW TO READ. WHICH DO YOU LIKE TO DO MORE? MARK THE PICTURE THAT SHOWS WHAT YOU LIKE TO DO MORE. 54

You can see from the kinds of assessment system that we have talked about that we don't believe that the beginning of formal schooling is a good time to label children "ready" or "not ready." The assessment of young children is preferably thought of as a series of diagnostic measures, to be followed by tailoring school activities to individual needs. This way of thinking of assessment is based on a model of young children as possessing broad behavior repertories at varying levels of development. It is very much in line with the behavioral objectives for young children developed here in _____. We generally believe it is the job of schools to provide the kinds of educational experiences to help each child to develop his or her potential to the fullest in order to live 55

up to his or her future role as a contributing member of a democratic society. It is a tall order, and the function of assessment is more to help the school to be ready for child, and less to decide whether a child is "ready" or "not ready" for school.

LIST OF SLIDES

1. Collage of Let's Look at First Graders publications
2. Collage of Instructional and Assessment materials
3. Let's Look at Children. Boxes, cards, etc.
4. Sequence - apple
5. Sequence - transportation
6. Sequence - pigeons - 2 sets

7-11. One-to-one correspondence. Blocks or checkers.

7.	Teacher's side		
8.	Pre-operational approach	- configuration	- number
9.	Transmittal	+ configuration	- number
10.	Operational use of number	+ number	- configuration
11.	Operational use of number	+ number	+ configuration

12. Conservation of number.
    Two rows have same number of blocks.
13. One side altered.
    Both sides changed.

14-17. Conservation of liquids.

18. Conservation of mass.
19. Seriation - small groups.
20. String.

21-22. Doll and snack

23. Monkey and rooster.
24. CIRCUS
25. Research behind CIRCUS.
26. Battery.
27. Areas of measurement.
28. Language measures.
29. Listen to the Story.
30. What Words Mean.
31. How Words Sound.
32. How Words Work.
33. Horses, monkeys.
34. Balloons, valentines
35. Story
36. Perception measures.
37. Child doing noises.
38. Noises.
39. Look Alikes.
40. Finding Letters and Numbers.
41. Copy What You See.
42. Information and Experiences
43. How Much and How Many.
44. Do You Know.
45. See and Remember.
46. Think It Through
47. Make a Tree
48. Make a Tree
49. Activities Inventory
50. Behavior Inventory
51. Educational Environment Questionnair
52. Sentence Reports
53. CIRCUS attitude trial items
54. " "
55. CIRCUS - End.